Studies in the genus Acacia—1

By B. R. Maslin

Abstract

Two species and one subspecies of *Acacia* are described—*A. megacephala* sp. nov., *A. echinata* sp. nov. and *A. moirii* E. Pritzel subsp. *recurvistipula* subsp. nov. All three taxa belong to Bentham's series *Pulchellae*.

Introduction

This is the first in a series of papers which will deal with the taxonomy of *Acacia* species primarily from Western Australia. Some of the morphological terms used in this and subsequent articles require brief explanation.

1. *Receptacle:* that portion of the inflorescence axis on which the flowers are borne.

2. *Bracteoles:* small bracts positioned on the receptacle, each of which subtends one flower.

3. *Terminal seta:* Bentham, Journ. Bot. (Hooker) 4:325 (1842), defined this structure as " A small point (which) terminates the petioles whether common or partial, in all or nearly all Mimoseae . . . . " The present author has modified Bentham's usage of this term: as applied here the terminal seta refers to the appendage which terminates the primary axis of a bipinnate leaf (Bentham's " common petiole "). It does not refer to the apical portion of the secondary axis of the leaf (Bentham's " partial petiole ").

4. *Areole:* an area which occurs on each face of most Mimosoideae seeds, generally more or less elliptic or oblong and bounded by a fine line (the *pleurogram*). (See J. P. M. Brenan, Leguminosae-Mimosoideae in Flor. Trop. E. Africa, p. 1 (1959) for a definition of areole, and E. J. H. Corner, The Leguminous Seed, in Phytomorphology 1:117-150 (1951) for a definition of pleurogram).

Acacia megacephala B. R. Maslin sp. nov. (Figure 1)

Frutex erectus diffusus 1–2 m altus, uni- vel multi-caulis, ramulis saepe pendulis, modice ad dense pilosis; cortex laevis, ad basin cinereo-brunneus, in ramulis rufo-brunneus. *Spinae* axillares, 5–15 mm longae, solitariae (saepe carentes), glabrae vel ad basin pilosae. *Stipulae* angustissime triangulares, 2–4 mm longae, plerumque sparsim pilosae. *Folia* bipinnata; *pinnae* unijugatae; *petiolus* brevissimus, ca. 1 mm longus; *seta terminalis* angustissime triangularis, 3–4(5) mm longa, breviter pilosa; *glans* ab axilla pinnarum oriens, stipitata, setam terminalem aequans, ad apicem dilatata, glabra vel pilosa; *rhachis* 4–6 mm longa, acuta, infra sparsim pilosa, supra glabra costa media prominente; *pinnulae* 4–6-jugae, anguste obovatae, 4–6 x 2–3 mm, obtusae, planae, inconspicue 1-nervatae, laeves glabrae, obscure virides *Capitula* florentia globulosa, sub anthesi 8–10 mm dia., floribus 80–90. *Pedunculi* axillares, solitarii vel binati 15–25 mm longi, folia multum excedentes, glabri. *Receptaculum* capitatum, glabrum vel breviter pilosum. *Bracteolae* dimorphae: (1) bracteolae inferiae in serie singulari ad basin receptaculi dispositae, reflexae, oblongae, ca. 1 mm longae, acutae, glabrae praeter apices; (2) bracteolae superiores spiraliter dispositae, ereetae, ca. 1·5 mm longae, unguibus linearibus plerumque glabris, in laminas pyriformes aliquantum concavas sparsim ciliolatas abrupte expansae. *Florae* 5-merae; *calyx* longitudine 2/3 corollae partes aequans, anguste turbinatus, longitudine 4/5 ejus connatus tubo glabro vel sparsim piloso, lobis oblongis obtusis sparsim ciliolatis; *corolla* 2–3 mm longa, longitudine 3/4 ejus connata, glabra; *pollinia* 12-granularia; *ovarium* sessile, glabrum. *Legumen* lineare ad anguste oblongum, 25–50 x 4 mm, glabrum pagina parum undulata, badium; marginibus crassis, fere rectis, pallidis. *Semina* longitudinalia, oblonga 3–4 x 1·5–2·0 mm, fusca; funiculus plerumque 2–plicatus, arillatus.

Type: At Kojarena Siding, 19 miles east of Geraldton towards Mullewa, Western Australia, 8 Aug. 1970, *B. R. Maslin* 676 (holo: PERTH, iso: K, MEL, NSW).

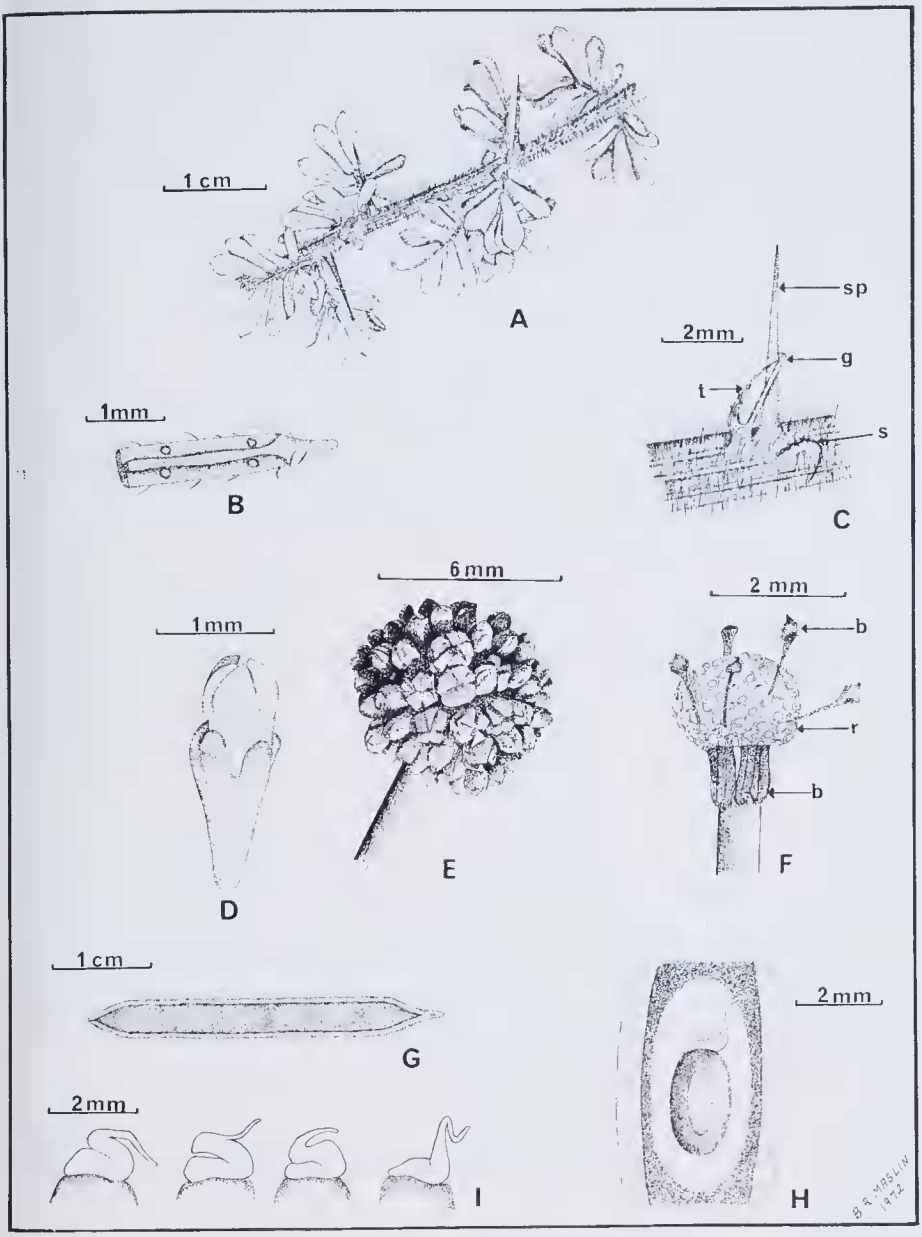

Figure 1—*Acacia megacephala* sp. nov. A—Portion of stem. B—Portion of rachis showing prominent midrib. C—Node with pinnae removed showing spine (sp), gland (g), terminal seta (t), and stipule (s). D—Flower. E—Flower head. F—Recptacle (r) with dimorphic bracteoles (b). G—Pod. H—Young seed in pod. I—Seed showing funicle variability.
A-F from B.R. Maslin 676; G-H from B. R. Maslin 684; I from Phillips s.n.

Erect, diffuse, single-or multi-stemmed *shrub*, 1–2 m tall; branchlets often pendulous, moderately to densely pilose; bark smooth, grey/brown at base, red/brown on branches. *Spines* axillary, 5–15 mm long, solitary (often absent from some nodes), glabrous, or pilose towards the base. *Stipules* very narrowly triangular, 2–4 mm long, normally shortly pilose. *Leaves* bipinnate; *pinnae* 1 pair; *petiole* very short, ca. 1 mm long; *terminal seta* very

narrowly triangular, 3–4(5) mm long, shortly pilose; *gland* arising at junction of pinnae, stipitate, ± equalling terminal seta, dilated at apex, glabrous or shortly pilose; *rachis* 4–6 mm long, acute, sparsely pilose below, glabrous and with a prominent midrib above; *pinnules* 4–6 pairs, narrowly obovate, 4–6 x 2–3 mm, obtuse, flat, inconspicuously 1-nerved, smooth, glabrous, dull green (at maturity). *Flower heads* large, globular, 8–10 mm diameter at anthesis, with 80–90 flowers. *Peduncles* axillary, solitary or in pairs, greatly exceeding the leaves, 15–25 mm long, glabrous. *Receptacle* capitate, glabrous or shortly pilose. *Bracteoles* dimorphous: (1) lower series (arranged in a single ring at base of receptacle) reflexed, oblong, ca. 1 mm long, acute, glabrous except at apex; (2) upper series (spirally arranged) erect, ca. 1·5 mm long, claws linear, normally glabrous, expanded into sparsely ciliolate, somewhat concave, pear-shaped laminae. *Flowers* 5-merous; *calyx* about 2/3 length of corolla, narrowly turbinate, connate for 4/5 its length, tube glabrous or very sparsely pilose, lobes oblong obtuse sparsely ciliolate and somewhat incurved at apex; *corolla* 2–3 mm long, connate for 3/4 its length, glabrous; *pollinia* 12-grained; *ovary* sessile, glabrous. *Legume* linear to narrowly oblong, 25–50 x 4 mm, glabrous, surface slightly undulate, dark brown; margin thickened, pale coloured, almost straight. *Seeds* longitudinal, oblong, 3–4 x 1·5–2·0 mm, brown; funicle yellow, usually with 2 short folds, gradually expanded into a thickened aril; areole ± oblong, 2·5–3·0 x 1·0 mm; pleurogram continuous.

Distribution: Western Australia; apparently confined to sandy or loamy soils in an area extending from about 10 miles east of Geraldton eastwards to the Greenough River. (Figure 4)

10 mi E of Geraldton, *W. E. Blackall* 2755; 19 mi E of Geraldton, *A. S. George* 9220; 17 mi E of Geraldton, *J. W. Green* 474; 19 mi E of Geraldton on the road to Mullewa, *B. R. Maslin* 684; Northern Gully (E of Geraldton), *G. Phillips* s.n.; ca. 50·5 mi W of Mullewa on the road to Geraldton, *M. D. Tindale* 1328.

Flowering period: August-September.

The presence of stipitate glands, axillary spines, and unijugate leaves relates this species to *A. lasiocarpa* Benth. and more closely to *A. pulchella* R.Br. However *A. megacephala* is readily distinguished from both of these species by its very long peduncles, prominently capitate receptacles, and its large flower heads each bearing 80–90 narrowly turbinate flowers. Vegetatively *A. megacephala* is distinguished from *A. pulchella* by its one-spined nodes (*A. pulchella* normally has 2 spines per node), longer narrower stipules and terminal setae, and somewhat larger pinnules. The flat pinnules and longer glands readily separate it from *A. lasiocarpa*.

Acacia echinata B. R. Maslin sp. nov. (Figure 2)

Frutex nanus, ramosissimus, compactus, pulvinatus, 2–5 cm altus, 50 cm vel major diam. partibus vegetativis sparsim strigillosis vel glabris; ramuli ± erecti, spinescentes, teretes; spinae axillares nullae. *Stipulae* anguste triangulares, 0·5–1 mm longae, praecipue ad basin aliquantum incrassatae. *Folia* bipinnata; *pinnae* unijugatae; *petiolus* prominens, ca. 2 mm longus, teres, ad basin parum contractus; *seta terminalis* 0·5–1 mm longa, aliquantum incrassata; *glans* in pagina supera petioli plerumque ad apicem, parva, sessilis, rotunda; *rhachis* 2–3 mm longa, teres, apice aliquantum complanato parum expanso, obtuso; *pinnulae* 3–4-jugae, anguste oblongae ad assymetricc anguste obovatae, 2–3 x 1 mm, obtusae, planae, inconspicue 1-nervatae, laeves. *Capitula* florentia parva, globulosa, sub anthesi 3–4 mm diam., floribus 12–15. *Pedunculi* axillares, solitarii 10–15 mm longi, sparsim strigillosi ad glabri. *Receptaculum* globulosum, glabrum. *Bracteolae* minus quam 1 mm longae, unguibus brevibus glabris, in laminas concavas obtusas ciliolatas expansae. *Florae* 5-merae; *calyx* longitudine 1/2 corollae partes aequans, turbinatus, longitudine 3/4 ejus connatus tubo glabro, lobis obtusis ciliolatis ad apices parum incurvatis; *corolla* longitudine 1/2 ejus connata, 1·5 mm longa, glabra; *pollinia* 12-granularia; *ovarium* sessile parce papillatum. *Legumen* anguste oblongum, ca. 10 x 3 mm, pagina undulata parce strigosa badia; marginibus crassis, fere rectis, ferrugineis. *Semina* matura non visa.

Type: 6 miles east of Kukerin, Western Australia, 20 Dec. 1964, *K. Newbey* 1620 (holo: PERTH, iso: K, MEL, NSW).

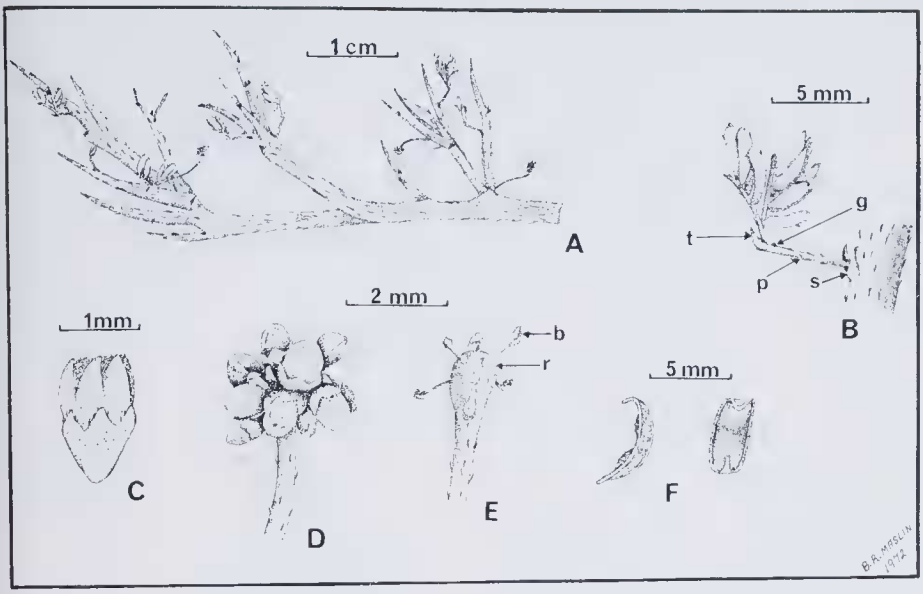

Figure 2—*Acacia echinata* sp. nov. A—Portion of branch system. B—Node showing petiole (p), stipules (s), terminal seta (t), and gland (g). C—Flower. D—Flower head. E—Receptacle (r) with bracteoles (b). F—Pod valves, side and top view. All from K. Newbey 1620.

Dwarf, much branched, compact, cushion-like *shrub*, 2–5 cm high and 50 cm or more in diameter, vegetative parts sparsely strigillose to glabrous; branchlets ± erect, spinescent, terete; axillary spines absent. *Stipules* narrowly triangular, 0·5–1 mm long, somewhat thickened especially near the base. *Leaves* bipinnate; *pinnae* 1 pair; *petiole* prominent, 3–4 mm long, terete, slightly contracted at base; *terminal seta* 0·5–1 mm long, somewhat thickened; *gland* on upper surface of petiole (normally near the apex), small, sessile, circular; *rachis* 2–3 mm long, terete, apex somewhat flattened and slightly expanded, obtuse; *pinnules* 3–4 pairs, narrowly oblong to asymetrically narrowly obovate, 2–3 x ca. 1 mm, obtuse, flat, inconspicuously 1-nerved, smooth. *Flower heads* small, globular, 3–4 mm diameter at anthesis, with 12–15 flowers. *Peduncles* axillary, solitary, 10–15 mm long, sparsely strigillose to glabrous. *Receptacle* globular, glabrous. *Bracteoles* less than 1 mm long, claws short, glabrous, expanded into concave, obtuse, ciliolate laminae. *Flowers* 5-merous; *calyx* about 1/2 length of corolla, turbinate, connate for ca. 3/4 its length, tube glabrous, lobes obtuse ciliolate and slightly incurved at apex; *coralla* 1·5 mm long, connate for 1/2 its length, glabrous; *pollinia* 12-grained; *ovary* sessile, very sparsely papillate. *Legume* narrowly oblong, ca. 10 x 3 mm, with a dark brown undulate moderately strigose surface; margins thickened, light brown, almost straight. *Seed* not seen in mature state.

Distribution: South-west Western Australia; known only from the type locality which is a gravelly hill between Kukerin and Tarin Rock. (Figure 4)

6 mi W of Tarin Rock, *F. Lullfitz* 5901; 198 mile peg Dumbleyung-Lake Grace road, *A. S George* 5800.

Flowering period: December-January.

The cushion-like habit, the short spinescent branchlets, and the single pair of pinnae borne on a long petiole make *A. echinata* a very distinctive species within the series *Pulchellae*.

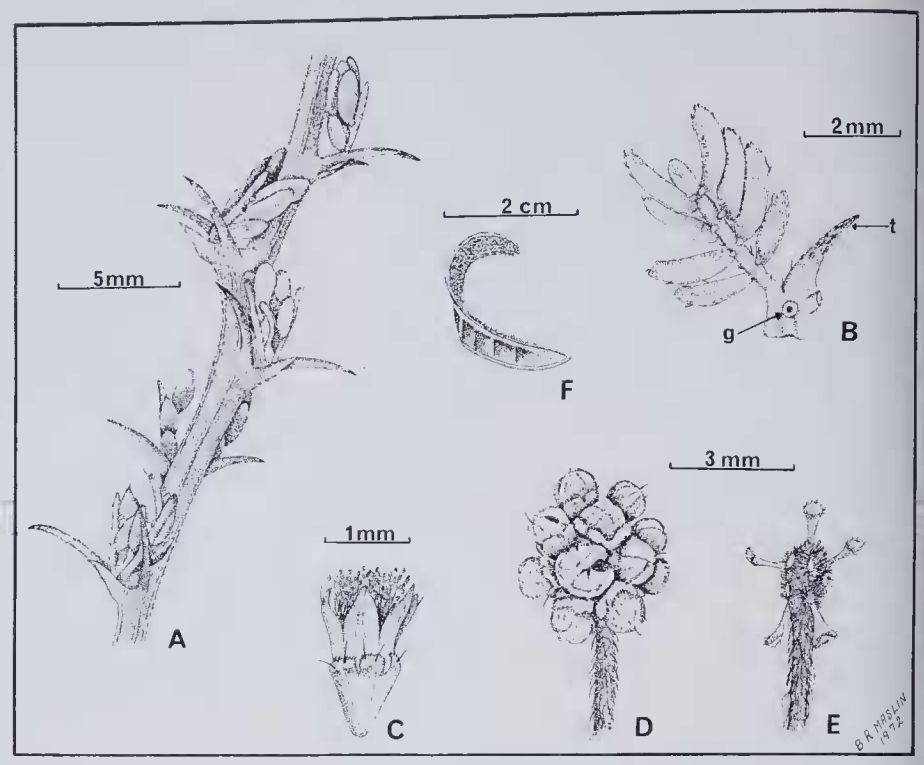

Figure 3—*Acacia moirii* E. Pritzel subsp. *recurvistipula* subsp. nov. A—Portion of branch. B—Leaf with gland (g), and terminal seta (t). C—Flower. D—Flower head. E—Receptacle with bracteoles. F—Pod valve.
A-E from A. S. George 6349; F from B. R. Maslin 525.

Acacia moirii E. Pritzel subsp. **recurvistipula** B. R. Maslin subsp. nov. (Figure 3)

A subspecie *moirii* stipulis spinescentibus recurvis; rhachidi 5 mm longa apice recto; pinnulis 3–5-jugis, parum incrassatis, enerviis vel inconspicue 1-nervatis, laevibus vel sparsim puberulis aliquantum glaucis, differt.

Type: 9 miles north of ' The Humps ' (which is ca. 10 miles due north-east of Hyden), Western Australia, 15 July 1970, *B. R. Maslin* 570 (holo: PERTH).

Differs from *A. moirii* E. Pritzel subsp. *moirii* chiefly in vegetative characters: stipules recurved, spinescent; rachis 5 mm long, apex straight; pinnules 3–5 pairs, scarcely thickened, nerveless or obscurely 1-nerved, glabrous to sparsely puberulous, somewhat glaucous.

Dwarf, erect, compact *shrub*, 20–40 cm tall; branches ± flexuose, antrorsely puberulous, axillary spines absent. *Stipules* spiny, 3–6 mm long, recurved, sparsely antrorsely puberulous, persistent. *Leaves* bipinnate; *pinnae* 1 pair; sparsely antrorsely puberulous to glabrous; *petiole* very short, ca. 1 mm long; *terminal seta* spiny, 2–3 mm long, straight or somewhat recurved, persistent; *gland* on upper surface of petiole, circular, sessile; *rachis* ca. 5 mm long, terete, apex straight or slightly recurved ± expanded; *pinnules* 3–5 pairs, narrowly oblong to obliquely elliptic, 2–3 x ca. 1 mm, obtuse, flat, nerveless or inconspicuously 1–nerved, smooth, slightly thickened. *Flower heads* globular, ca. 5 mm diameter at anthesis, with ca. 15 flowers. *Peduncles* axillary, solitary, 5–10 mm, mostly retrorsely puberulous. *Receptacle* short, ovoid, ca. 1 mm long, densely puberulous. *Bracteoles* ca. 1 mm long, claws glabrescent, gradually expanded into inflexed, pilose laminae. *Flowers*

5-merous; *calyx* ca. 1 /2 length of corolla, turbinate, connate for 3 /4 its length, 5-nerved, tube glabrous, lobes oblong obtuse ciliolate (often invested with a few additional long straight hairs) and somewhat incurved at apex; *corolla* 1·5–2 mm long, connate for ca. 1 /2 its length, 5-nerved, usually glabrous (sometimes invested with a few long straight hairs at apex); *pollinia* 12-grained; *ovary* sessile, sparsely papillate. *Legume*—see below. *Seed* n.v.

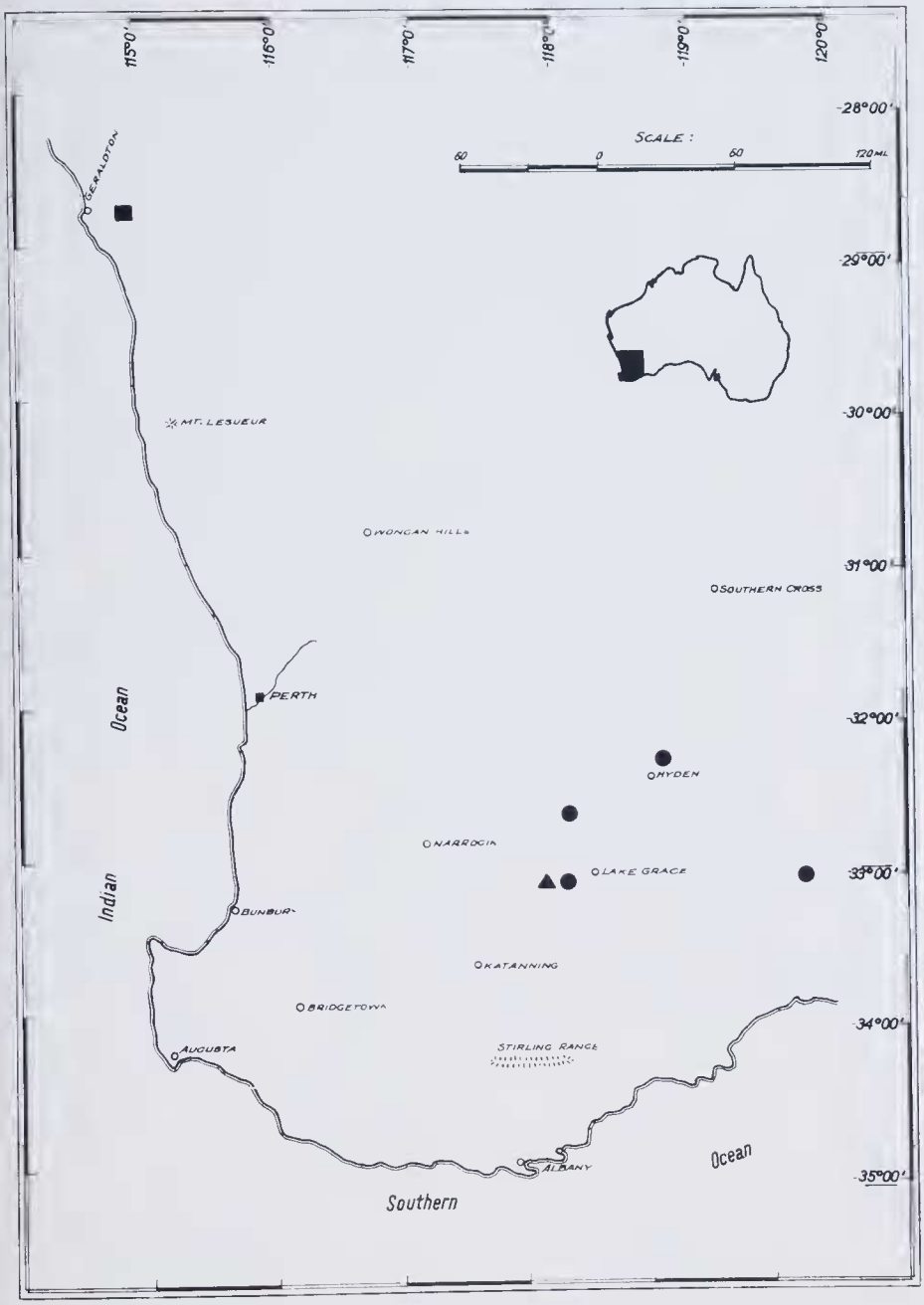

Figure 4—Distribution of *A. megacephala* (■) *A. echinata* (▲), and *A. moirii* subsp. *recurvistipula* (●).

Distribution: South-west Western Australia; from Kukerin to Hyden and eastwards to about Lake King. (Figure 4)

8 mi N of ' The Humps ', *B. R. Maslin* 569; ca. 4 mi S of Kulin, *B. R. Maslin* 525; 197½ milepeg, E. of Dumbleyung, *A. S. George* 6349; 16 km W of Lake King township, *P. G. Wilson* 7159; 37 km E of Lake King, *D. Young* 129.

Flowering period: May-July.

A. moirii subsp. *recurvistipula* differs from the type subspecies chiefly in vegetative characters. Although the stipules of subsp. *moirii* are prominent, and sometimes thickened at the base, they are never spiny or recurved as in the new subspecies. In addition, the rachis of subsp. *moirii* is about twice as long as in subsp. *recurvistipula* and has a more prominently recurved tip. The pinnules of the two subspecies are quite different; in the type subspecies they are thicker, greater in number, and have a prominently raised midrib (a character never found in subsp. *recurvistipula*), they are generally less glaucous, and they have a denser indumentum.

This subspecies usually occurs in open places on sandplains where it grows as a small erect compact shrub. However, on a few occasions it has been found growing among litter beneath tall shrubs such as *Casuarina pinaster* C. A. Gardner. In these latter cases subsp. *recurvistipula* assumes a semi-prostrate and somewhat openly branched habit; in addition its pinnules and peduncles are somewhat enlarged, while the stipules and terminal seta are not so rigid.

No seed of subsp. *recurvistipula* has been collected. The following is a description of a few dehisced fruiting valves caught in the branches of *B. R. Maslin* 525: narrowly oblong, 25 x 5 mm, curved, densely pilose, dark brown, slightly undulate, margins thickened.

The distributions of the two subspecies do not appear to overlap. *A. moirii* subsp. *moirii* has the more southerly range, extending from about Jerramungup to Ravensthorpe while subsp. *recurvistipula* occurs further inland.